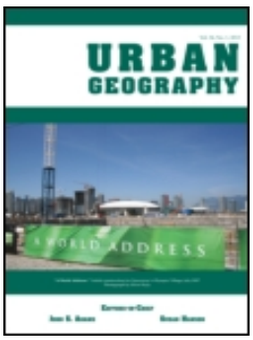

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Situated Electronic Commerce: Toward A View as Complement Rather than Substitute for Offline Commerce

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SITUATED ELECTRONIC COMMERCE: TOWARD A VIEW AS COMPLEMENT RATHER THAN SUBSTITUTE FOR OFFLINE COMMERCE[1]

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Abstract: The adoption and use of electronic commerce by many firms was shaped by a number of assumptions about how it adds value to economic exchange. Many of these assumptions have direct relevance for the interaction between e-commerce and geography in that they emphasized the ability of e-commerce to transcend distance and reach into markets without physical presence. The belief in this ability was based on the immediacy of electronic transmission and the distance-insensitive tariffing applied to packet-switched IP networks, the presumed efficiency of transaction automation over in-person interaction, and the view promulgated by network economists that electronic commerce is highly subject to network effects that reward rapid growth in the number of users. As a result, many firms entered the online arena without adequate attention to the role of geography in shaping commercial exchange patterns. This paper argues for a view of e-commerce as situated within a particular social and geographic context, enabling services that complement a firm's physical location, work in concert with other modes of interaction and exchange, and emphasize pre-existing exchange partners. A review of business-to-consumer and business-to-business electronic commerce research is provided in support of this situated perspective.

INTRODUCTION

The rapid adoption of electronic commerce in the latter half of the 1990s was accompanied by a view that Internet-based economic exchange had finally freed consumers and businesses from the shackles imposed by geography. E-commerce was seen as a transaction medium enabling firms to inexpensively access new markets, replace outmoded or inefficient supply chains and distribution channels, and achieve dramatic growth in the number of customers served (Wigand and Benjamin, 1995; Cairncross, 1997; Choi et al., 1997). Not only did the perception that electronic commerce was divorced in some way from physical geography encourage the rapid growth of "dot.com" firms, it also influenced many existing firms to build an online presence that was more directed toward distant markets than local ones (Steinfield et al., 1999). Even today, few retailers build Web sites that effectively integrate online and offline outlets, choosing instead to treat

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e-commerce as an independent sales channel that is relatively disconnected from other aspects of a firm's physical infrastructure (Steinfield, 2004a).

To say that electronic commerce transcends geography implies at least two kinds of effects on transactions. First, it implies that e-commerce transactions are not dependent on the physical locations of buyers and sellers. Second, it implies that e-commerce transactions are not predicated on any prior business relationship between buyers and sellers. Following Steinfield (2004b), these notions of e-commerce are based on a number of widely held assumptions derived from the technical features of Internet-based transactions, including:

- IP networks are thought to make distance irrelevant. Unlike circuit-switched networks, Internet protocols allow telecommunications traffic to be insensitive to distance (Cairncross, 1997). Hence, electronic mails, file transfers, web hosting, and other Internet services cost the same regardless of the distance between sender and receiver. Indeed, on the Web, unless a site explicitly highlights geographical information, the physical address of the destination site is unknown to most users. Thus, this technical feature directly leads to the implication that buyers and sellers no longer have to be co-located, because the Internet has reduced the transaction costs associated with doing business with a distant partner to the point where distant sellers are competitive with local ones (Bakos, 1997, 1998). There is no cost associated with search or communication delays because various directory services and search engines help to quickly locate trading partners, and electronic transmissions are virtually instantaneous.

- Internet transactions are substitutable for transactions formerly occurring in person or via other forms of direct communication. Unlike former generations of network-based transactions, the Web supports rich graphics and multimedia, enabling even highly complex products to be sold. Moreover, innovations in web programming enable Web-based enterprises to complete transactions, including complex customization and personalization features (Rayport and Sviokla, 1995). Modern logistics and transport systems complete the picture by ensuring rapid fulfillment of online orders. Hence all the elements needed to effectively automate transactions are present, and enable online transactions to substitute for offline ones (Choi et al., 1997).

- E-commerce is highly susceptible to network efforts, suggesting that those with the largest number of users will achieve sustainable competitive advantage (Choi et al., 1997; Shapiro and Varian, 1999; Kaplan and Sawhney, 2000; Afuah and Tucci, 2001). According to this assumption, the more users an e-commerce site has, the more value it offers any individual user. This occurs in many ways for a variety of different business models. Network effects are thought to be crucial, for example, for sites that function as third-party market makers offering brokerage services. In order to improve the liquidity of the market such sites must be able to attract a critical mass of buyers and sellers. The more of each a market maker can attract, the better the probability any member has of finding a desired match. Another common type of network effect is evident in sites that offer recommendation systems, since the ability to develop such recommendations improves with more users and more data

(Dieberger et al., 2000). The belief in such network effects justifies a continuing drive to increase the number of users, perhaps at the expense of a focus on using e-commerce to better support pre-existing business relationships.

As noted in Steinfield (2004b), these assumptions formed the basis of the dominant perspective in e-commerce, shaping its development and use in both business-to-business (B2B) and business-to-consumer (B2C) exchange. In this paper, I argue that this dominant perspective has led to an underestimation of the role of geography and social ties, resulting in the tendency for many companies to implement e-commerce that overemphasizes access to distant markets, seeks to replace richer customer interactions with lower cost automated transactions, and emphasizes market share in place of ensuring that existing exchanges provide requisite value and profit. A review of research findings is used to develop an alternative, "situated" view of e-commerce, in which (1) physical location still matters, both for B2C and B2B e-commerce, (2) for many firms with an existing physical retail presence, e-commerce may be better viewed as a complement to rather than a substitute for in-person transactions, and (3) particularly in B2B situations, e-commerce may be best used to strengthen, not bypass, pre-existing relationships, and hence a focus purely on market-share growth and the resulting network effects may be misguided.

This paper is organized as follows. Section one provides a discussion of e-commerce in retail environments, based largely upon the results of a multi-year research program on the dynamics of click and mortar business models (Steinfield, 2004a). The relative success of such models highlights the importance of physical presence in a market due to the opportunities arising from cross-channel synergies. Section two explores the business-to-business arena, noting the lack of success of third party B2B e-hubs. Following Steinfield (2004b), I note that, despite the limited evidence to date of a prominent role of location in B2B e-commerce, the potential for a situated perspective on B2B e-commerce trade is suggested by the growing attention being paid to regional and local business clusters. Additionally, a situated B2B e-commerce perspective is strengthened by a number of studies that reveal the importance of pre-existing business trading relationships when implementing the capability for electronic transactions between organizations. The arguments are summarized in the final concluding section.

TOWARD A SITUATED VIEW OF B2C E-COMMERCE

In the early years of Web-based commerce, much emphasis was placed on sources of competitive advantage that Internet firms had over traditional ones, primarily using a transaction cost logic (Bakos, 1997; Choi et al., 1997). Transaction cost economics emphasizes the nature of costs that firms incur in the process of conducting transactions with buyers or sellers (Williamson, 1975; Williamson, 1985). Such costs include information gathering and search costs, negotiation and settlement costs, and monitoring costs to ensure that trading partners adhere to the terms of any agreements made. Information systems researchers relied heavily on transaction cost theory to predict that a major effect of the Internet would be to lower search and monitoring costs (Malone et al., 1987; Bakos, 1997). Once such costs were reduced, buyers could then find sellers in distant geographic markets who had lower prices, provided better service, offered higher quality, or had products that better matched needs (Malone et al., 1987; Wildman and Guerin-

Calvert, 1991; Wigand and Benjamin, 1995; Bakos, 1997; Cairncross, 1997; Choi et al., 1997; Wigand, 1997). Hence, transaction cost economics provided the conceptual underpinnings for explaining how distant Internet firms may be able to compete with local, physically present businesses (Choi et al., 1997). E-commerce researchers and practitioners thus arrived at the first dominant assumption noted above: that distant was irrelevant. Because of the ease of product information search on the Internet, the basic raison d'etre for many local retailers—the fact that they had a geographic monopoly and could therefore charge high enough prices to overcome their inefficiencies and limited selection no longer applied (Cairncross, 1997).

Other supposed advantages of e-commerce further encouraged the separation of e-commerce channels from traditional physical outlets. Many operational advantages such as the ability to operate 24 hours a day, seven days a week stem from the lower costs associated with automated transactions online. In addition to yielding a lower cost per transaction, online stores could also engage in the automated collection and analysis of transaction and customer data, could collect customer demand prior to sourcing products, yielding lower inventory costs, had lower menu costs enabling rapid pricing changes in response to market conditions, and could more easily construct new product bundles to meet customer needs (Wigand and Benjamin, 1995; Choi et al., 1997; Wigand, 1997; Bailey, 1998; The 10 Driving Principles of the New Economy, 2000; Afuah and Tucci, 2001). Collectively, these operational advantages created the impression that even for firms with an existing physical retail infrastructure, a parallel approach to e-commerce would help to avoid saddling the new Internet channels with the burdens from the traditional channels (Steinfield, 2004a).

This early perspective ignored the potential synergies that arise when firms have a combination of physical and e-commerce channels. Synergies yielding competitive advantage arise from the many complementary assets that click and mortar firms possess that purely Internet firms may not. Established firms have existing supplier and distributor relationships, experience in the market, a customer base, and other complementary assets that can enable them to take better advantage of an innovation like e-commerce (Teece, 1986; Afuah and Tucci, 2001).

A growing body of conceptual and empirical work has investigated the click and mortar business model, and, in the wake of the dot.com failures of 2000 and 2001, few believe the early expectations that virtual firms will drive out physical ones and make distance irrelevant (Friedman and Furey, 1999; Steinfield and Klein, 1999; Otto and Chung, 2000; Rosen and Howard, 2000; Steinfield et al., 2001; Ward, 2001; Steinfield, Adelaar, and Lai, 2002; Steinfield, Bouwman, and Adelaar, 2002). These works suggest that advantages arise not only from the ability that a multichannel approach offers for reaching new customers and offering new services, but also because each channel can have spillover effects that result in increased purchases and reduced costs in the other channel (Ward, 2001).

The history of e-commerce provides strong empirical support for the notion that click and mortar approaches to e-commerce are more successful than nonintegrated approaches. The dot.com firms followed the dominant paradigm by attempting to reach markets without physical presence, relying on Web-based automation over any form of human intervention, and heavily emphasizing market share growth to capitalize on scale economies and network effects. Yet, by one estimate, only 10% of the dot.com firms that began in 1995 still survived in 2001 (Laudon and Traver, 2001). Moreover, Laudon and

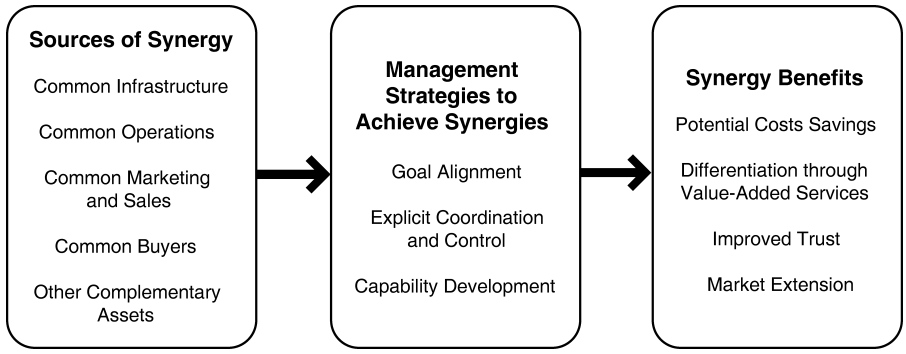

Fig. 1. Sources, management requirements, and benefits of click and mortar synergies. *Source*: Steinfield, Adelaar, and Lai, 2002.

Traver also noted that click and mortar retailers began to rapidly replace dot.com retailers in lists of top e-commerce firms in the years following the dot.com bust.

The underlying sources of advantage of click and mortar firms have been extensively analyzed by Steinfield and colleagues (Steinfield et al., 2001, Steinfield, Adelaar, and Lai, 2002; Steinfield, Bouwman, and Adelaar, 2002; Fig. 1).

Sources of Synergy between Physical and Virtual Channels

Click and mortar firms have a number of potential sources of synergy not necessarily available to pure Internet firms or traditional firms without an e-commerce channel. Among the sources spelled out in classic competitive advantage theory are common infrastructures, common operations, common marketing, and common customers (Porter, 1985; Fig. 1). An example of the use of a common infrastructure is when a firm relies on the same logistics system (e.g., warehouses, trucks) for handling distribution of goods for e-commerce activities as well as for delivery to its own retail outlets. Another critical infrastructure that can be shared is the IT infrastructure. Recent empirical work suggests, in fact, that the more firms build their e-commerce capability in conjunction with an existing IT infrastructure, the more likely they will see performance improvements (Zhu and Kraemer, 2002). An order-processing system shared between e-commerce and physical channels is a good example of a common operation as a source of synergy. This can enable, for example, improved tracking of customers' movements between channels, in addition to potential cost savings. E-commerce and physical channels may also share common marketing and sales assets, such as a common product catalogue, a sales force that understands the products and customer needs and directs potential buyers to each channel, or advertisements and promotions that draw attention to both channels. Finally, an alternative perspective on the cannibalization issue is the fact that e-commerce and physical outlets in click and mortar firms often target the same potential buyers. This enables a click and mortar firm to be able to meet customers' needs for both convenience and immediacy, enhancing customer service and improving retention. Hence, to the extent that virtual and physical channels are able to share these various assets in a coordinated fashion, a variety of benefits can emerge.

Click and Mortar Cases Demonstrate Complementary Use of Situated E-Commerce

The right-hand side of the framework in Figure 1 focuses on the potential benefits that click and mortar firms may achieve when synergies between the Web and existing physical assets are exploited. Based on a series of case studies conducted in both the Netherlands (Steinfield, Bouwman, and Adelaar, 2002) and the United States (Steinfield, Adelaar, and Lai, 2002), four broad areas of benefit have been identified. These include: (1) lower costs, (2) increased differentiation through value-added services, (3) improved trust, and (4) geographic and product market extension. In general, each area of benefit reveals the importance of leveraging each firm's existing physical presence, and treating e-commerce as a complementary rather than a substitute channel to customers.

Lower costs. Cost savings were reported in a number of areas in the cases, including labor, inventory, marketing/promotion, and distribution. Labor savings result when costs are switched to consumers for such activities as looking up product information, filling out forms, and relying on online technical assistance for after-sales service. An added benefit of such customer self-service for routine transactions is that sales people can concentrate on upselling and other higher-value activities. For example, in one of the cases reported in Steinfield, Bouwman, and Adelaar (2002), an online banking service was used for routine money transfers and account queries, offloading this activity from tellers in branches. Instead, branch employees could focus on revenue-generating services such as mortgage loans. Inventory savings arise when firms find that they can avoid having to stock infrequently purchased goods at local outlets, while still offering the full range of choices to consumers via the Internet. Marketing and promotion efficiencies are garnered when each channel is used to inform consumers about services and products available in the other. Delivery savings may result from using the physical outlet as the pick-up location for online purchases, or as the initiation point for local deliveries.

Differentiation through value-added services. Physical and virtual channel synergies can be exploited at various stages in a transaction in order to help differentiate products and add value. Examples of pre-purchase services include various online information aids to help assess needs and select appropriate targets or, conversely, opportunities in the physical environment to test out products. Examples of purchase services include ordering, customization, and reservation services, as well as easy access to complementary products and services. Post-purchase services include online account management, social community support, loyalty programs and various after-sales activities that may be provided either online or in the physical store. Typical opportunities are in the areas of installation, repair, service reminders and training. Although many of these value-added services are potentially available to single-channel vendors, combined deployment of such services (e.g., online purchase of computer with in-store repair or training) can enhance differentiation and lock-in effects (Shapiro and Varian, 1999).

Improved trust. Three reasons for improved trust, relative to pure Internet firms, derive from the physical presence of click and mortar firms, including reduced consumer risk, affiliation with and embeddedness in recognized local social and business networks, and the ability to leverage brand awareness. Lower perceived risk results from the fact that there is an accessible location to which goods can be returned or complaints can be registered (Tedeschi, 1999). Affiliation and embeddedness in a variety of social networks can facilitate the substitution of social and reputational governance for expensive contracts or

legal fees (Granovetter, 1985). DiMaggio and Louch (1998) showed that, particularly for risky transactions, consumers are likely to rely on social ties as a governance mechanism. Such ties are more likely to exist between geographically proximate buyers and sellers, suggesting that there may indeed be a preference for doing business with firms that are already physically present in the local market. Finally, marketing theorists have long recognized the power of branding as a means of building consumer confidence and trust in a product (Kotler, 1999). Established firms are able to leverage their familiar name to make it easier for consumers to find and trust their affiliated online services (Coates, 1998).

Geographic and product market extension. It is, of course, very true that many click and mortar firms do seek to extend their reach beyond traditional physical outlets, addressing new geographic markets with e-commerce. Interestingly, Steinfield and colleagues (Steinfield, Adelaar, and Lai, 2002; Steinfield, Bouwman, and Adelaar, 2002) found that in several of their cases the supposedly new customers in distant markets were actually former customers of the physical outlet who had moved away but wanted to continue doing business with the firm. It is also worth pointing out that some of the market extension comes not from reaching into new geographical locations, but from expanding into new product markets. Virtual channels can extend the product scope and product depth of physical channels by enabling firms to offer new products that they do not have to physically stock locally. Moreover, firms may add new revenue-generating information services online that would not be feasible to offer in physical outlets. Finally, the Internet may help reach customers within an existing market who may not have visited the physical outlet, but are otherwise attracted to the virtual channel due to its special characteristics (Anderson et al., 1997).

Avoiding Channel Conflict in Click and Mortar Enterprises

Not all click and mortar firms gain the kinds of benefits discussed above. Rather, some firms with multiple channels fall prey to channel conflicts, which can occur when the alternative means of reaching customers (e.g., a Web-based store) implicitly or explicitly competes with or bypasses the existing physical channels (Stern and Ansary, 1992; Balasubramanian, 1998). One common problem is that one channel may simply cannibalize sales from the other. Perceived threats caused by competition and conflict across channels can have other harmful effects, including limited cooperation across the channels, confusion when customers attempt to engage in transactions using the two uncoordinated channels, and even sabotage of one channel by the other (Friedman and Furey, 1999; Useem, 1999; Ward, 2001). A critical finding from the click and mortar cases, highlighted by the center column of Figure 1, is that management must act to diffuse conflicts and ensure the necessary alignment of goals, coordination and control, and development of capabilities to achieve synergy benefits (Steinfield, Adelaar, and Lai, 2002; Steinfield, Bouwman, and Adelaar, 2002).

In the successful click and mortar companies, firms went through a process of goal alignment across physical and virtual channels (Steinfield, Adelaar, and Lai, 2002; Steinfield, Bouwman, and Adelaar, 2002). They worked to ensure that all employees involved realized that the parent firm benefits from sales originating in either channel. Management and employees recognized the value of existing physical assets and did not seek to replace them with e-commerce, nor did they expect e-commerce to function as a

stand-alone business. One problem faced by click and mortar firms is that the contributions made by the Internet channel may be intangible and difficult to measure (Tedeschi, 2001a). Managers have to be open to such intangible benefits and not, for example, evaluate e-commerce divisions purely on the basis of their own sales and profitability. Moreover, there must be agreement on what types of customers (e.g., existing vs. new) are targeted by the new e-commerce channel.

Aligning goals was only the first step to achieving value from complementary assets in the case studies (Steinfield, Adelaar, and Lai, 2002; Steinfield, Bouwman, and Adelaar, 2002). The more successful cases went further and implemented explicit coordination and control mechanisms that helped to exploit the various synergy opportunities. These include mechanisms such as IT systems integration for ensuring interoperability so that customers may move freely between channels. In most cases, firms also demonstrated coordination by using each channel to promote the other. One of the most common strategies for enforcing cross-channel cooperation is to build in incentives, such as the allocation of e-commerce sales credit to specific outlets based on customers' addresses. Here again, the physical location of customers and of outlets matters greatly. Finally, the successful click and mortar firm manager recognized the differing cost structures and capabilities associated with each channel, and developed measures that encouraged customers to use the most appropriate channel for the services they were seeking.

It is important to recognize that in many situations, such as with small and medium-sized enterprises (SMEs), traditional firms may lack important competencies needed to achieve synergy benefits with e-commerce. For example, traditional firms may lack Web development skills, or logistics skills needed to serve distant markets. Thus another management strategy used by several of the cases reported in Steinfield, Adelaar, and Lai (2002) and Steinfield, Bouwman, and Adelaar (2002) was to develop the needed capabilities through an alliance with a Web company. Despite this use of a dot.com partner, these companies still used an integrated approach that directly depended upon the geographic location of the physical outlets. For example, a number of Dutch health food shops had no in-house Web expertise. They worked with an online health food service that collected orders and sent them via fax to customers' closest physical store.

B2C Summary

The preceding review provides support for a situated view of B2C e-commerce. The broad-based failure of the vast majority of pure Internet firms demonstrated that there are significant problems with the earlier conceptions of e-commerce. Conversely, the growing e-commerce operations of traditional retailers suggest that such companies can capitalize on complementary assets to compete more effectively. A set of case studies of successful click and mortar companies reveals that many of their advantages stem directly from the fact that such firms can leverage their existing physical presence in a given community, contradicting the notion that geography and distance are irrelevant in an Internet era. Moreover, the cases illustrated the benefit of complementing online services with in-person customer interactions, such as when companies offer online ordering with in-store pickup. This finding contradicts the prevailing view that e-comerce firms must emphasize transaction automation as a substitute for offline customer interactions. Rather, a more integrated strategy would rely on online transaction capabilities for

routine transactions, while in-person customer interactions can be used for higher-value exchanges. Finally, the cases demonstrated that many of the users of a click and mortar Web site were existing customers who also used the firm's physical outlets. Hence it was just as important, if not more, to emphasize retention of an established customer base instead of focusing primarily on costly customer acquisition. In summary, this review of B2C developments directly contradicts the three assumptions outlined at the outset of the paper that characterized the dominant e-commerce paradigm.

TOWARD A SITUATED VIEW OF B2B E-COMMERCE

Just as with B2C e-commerce, the three dominant assumptions—distance irrelevance, substitution for costlier in-person interactions, and importance of network effects—were influential in shaping B2B e-commerce activities. In this section, developments in B2B marketplaces are discussed, and research that offers a contrasting view to these original assumptions is highlighted.

The Rise and Fall of Internet B2B Electronic Marketplaces

E-commerce researchers generally expect the value of B2B electronic transactions to vastly exceed business-to-consumer (B2C) retail trade due to the enormous volume of goods and services traded between firms (Kaplan and Sawhney, 2000; Subramami and Walden, 2000; Garicano and Kaplan, 2001; Laudon and Traver, 2001). Laudon and Traver (2001), reporting figures from a Jupiter Media Metrix report, estimated U.S. B2B trade at $12 trillion in 2001. As e-commerce began to take off in the late 1990s, the potential for even a small fraction of this trade to be conducted over the Internet attracted hundreds of new B2B market entrants. As early as 2000, the U.S. Department of Commerce (2000) reported that more than 750 B2B e-markets were operating worldwide in a range of different industries. Laudon and Traver (2001) estimated that up until the dot.com bust, more than a thousand B2B network marketplaces had been created.

Electronic commerce in support of B2B trade has mainly focused on the opportunities for improved efficiencies in procurement processes (Segev et al., 1999; Kaplan and Sawhney, 2000; Laudon and Traver, 2001). The logic is similar to B2C e-commerce, but with higher stakes. Transaction efficiencies arise from the ability of B2B electronic marketplaces to reduce the search and monitoring costs for participating firms (Bakos, 1997; Bakos, 1998; Segev et al., 1999; Steinfield et al., 2000; Garicano and Kaplan, 2001). In the height of the dot.com euphoria, the B2B e-hub was one of the most prominent new business models in what was then called the "digital economy" (Timmer, 1998). However, despite the widespread optimistic projections by industry consultants, academic analysts and government policy makers (Katsaros et al., 2000; U.S. Department of Commerce, 2000), most third party-provided B2B marketplaces have not met with much success, and many have failed entirely (Laudon and Traver, 2001; Tedeschi, 2001b).

The failure of third party B2B marketplaces does not mean that B2B e-commerce is unimportant. Just as with B2C e-commerce, B2B e-commerce continues to grow. It is based, however, on different approaches that are not shaped so forcefully by the earlier dominant assumptions. In particular, it is important to distinguish between Internet-based

network marketplaces and private industrial networks (Laudon and Traver, 2001). These differing approaches to B2B electronic trade are described in the following sections.

Contrasting Internet B2B Marketplaces with Private Networks

B2B Internet marketplaces have been classified according to two important dimensions of business purchasing: how businesses buy and what businesses buy (Kaplan and Sawhney, 2000). The "how" dimension distinguishes between spot purchasing to fill an immediate need and systematic purchasing for planned, long-term needs. The former is often done using ephemeral, market-based transactions, without long-term contracts. The latter is often done after significant negotiation, and is used for purchasing in large volumes from trusted trading partners. The "what" dimension normally distinguishes between vertical (also called direct or manufacturing) inputs that relate to the core products of a firm and horizontal (often called indirect or MRO for maintenance, operating and repair) inputs, such as office supplies, that are acquired by all firms. Laudon and Traver (2001) distinguished between the following four types of Internet-based B2B marketplaces.

- E-distributors such as Grainger.com or Staples.com offer electronic catalogues representing thousands of suppliers in support of spot purchasing for horizontal inputs. Laudon and Traver (2001) referred to them as the Amazon.coms for industry since they operate much like retailers. The main benefit for buyers is simply the reduced search cost, although additional services like credit and account management are offered to help further reduce transaction costs.

- E-procurement services such as Ariba.com also offer MRO supplies, but focus on systematic purchasing rather than spot purchasing. Such B2B intermediaries offer a range of procurement services, including the licensing of procurement software that supports a range of value-added services. They do not own the supplies, but offer the catalogues of thousands of suppliers from whom they also obtain fees and commissions. Theoretically, they bring value by aggregating both buyers and sellers, decreasing search costs for both parties, and therefore are subject to significant positive network externalities.

- Exchanges, such as E-steel.com are intermediaries that focus on bringing together buyers and sellers within a particular industry, and concentrate on the spot purchasing of manufacturing inputs. They charge commissions, but offer a range of purchasing services to buyers and sellers, supporting price negotiations, auctions, and other forms of bidding in addition to normal fixed-price selling. Buyers benefit from greater choice and lower prices, while sellers gain access to large numbers of buyers. Often these vertical markets are used to unload surplus materials, for example, via auctions. They are also subject to network externalities.

- Industry consortia are best represented by Covisint, the electronic procurement system developed by the leading automobile manufacturers. These exchanges are typically jointly owned by large buying firms seeking to rely on electronic networks to support long-term relationships with their suppliers. Entrance is by invitation only,

and the buying clout of the founders influences suppliers to make the investments needed to participate.

In contrast to these various forms of network marketplaces, private industrial networks are closed user group affairs, mainly linking a small set of strategic partners together with private infrastructure (Laudon and Traver, 2001). These strategic partners may be organized by a focal firm such as a manufacturer, which, together with its suppliers and downstream channels, is seeking greater efficiencies in serving their common market. These private industrial networks often encompass a particular value chain enabling just-in-time inventory, efficient consumer response, and collaborative design and production. Increasingly, industry observers are focusing on value-webs, in which the respective value chains of all the strategic partners are incorporated into the network to seek out new ways to gain efficiencies and add value for end-customers.

According to the logic of the three assumptions provided at the outset of this paper, B2B electronic exchanges would bring together large numbers of businesses regardless of location, enabling firms to find the lowest cost provider without additional transaction costs. B2B hubs would support electronic procurement, enabling automated ordering and fulfillment, rather than relying on human intervention. Finally, B2B hubs would experience network externalities, so that the more firms that join any particular hub, the more value it would offer to its members, mainly through improved liquidity as the odds of finding an appropriate trading partner are higher with larger markets.

However, as noted at the start of the discussion of B2B e-commerce, in most cases, the B2B marketplace business model did not achieve these expected successes. In fact, the vast majority of B2B electronic trade occurs over private industrial networks (Laudon and Travel, 2001). Moreover, among the network marketplace models described above, the fastest growth is in the area of industry consortia, not in the area of B2B exchanges. The situated e-commerce perspective offered here helps to explain these trends. Empirical evidence showing the importance of prior trading relations is mainly used to support a situated view. Additionally, a growing focus on local and regional business clusters around the world suggests that there may even be a powerful geographical element to B2B e-commerce.

The Role of Geography, Personal Relations, and Small Networks

The high failure rate of third-party B2B e-hubs, coupled with the dominance of private networks and the growth of industry consortia, reflects an important dynamic. Businesses have established relations with their suppliers, and the trust engendered by reliable performance and commitment over the long term may be more valuable to firms than any short-term price advantages offered by the supposedly neutral marketplaces. Indeed a new trend in the B2B electronic trade arena is the rise of "collaborative e-commerce" where networks are used for far more than simple transaction support. Joint product design, more tightly integrated inventory databases, and other forms of coordination between producers and suppliers occur over private intranets. In a sense, these developments are merely the latest manifestation of what Malone and colleagues (1987) referred to as electronic hierarchies, where firms rely on networks to facilitate outsourcing, but only to a small number of firms with which they are tightly integrated. Substantial

empirical evidence exists suggesting that these inter-organizational forms are more common and long-lasting than the market exchanges (Steinfield et al., 1995; Kraut et al., 1998).

Rarely is the role of location discussed in the literature on B2B electronic markets, and the relationship between geography and B2B e-commerce is not as straightforward as with B2C click and mortar e-commerce. An argument for the potential relevance of geography, however, may be derived from the growing body of work by economists and geographers studying the significant role that location plays in the formation and maintenance of business trading communities, primarily within the context of discussions about business clusters (Porter, 1990, 1998, 2000).

Porter (1998, p. 10) defined a cluster as a "critical mass of companies in a particular field in a particular location.…" He further noted that they can include "… a group of companies, suppliers of specialized inputs, components, machinery, and services, and firms in related industries." They can also include "firms in downstream industries, producers of complementary products, specialized infrastructure providers, and other institutions that provide specialized training, and technical support" as well as industry groups such as trade associations. This description parallels the structure of many of the electronic business trading communities established in the past several years, except that Porter's cluster members are physically co-located in a particular region.

Several of the primary economic benefits ascribed to business clusters are similar to the main benefits of participation in a B2B electronic market: improved access to specialized inputs, lower transaction costs, and access to complementary goods and services. Clusters are also thought to enhance the rate of innovation among member firms.

Rather than relying on electronic networks and automation to achieve these transactional and informational advantages, clusters capitalize on proximity. A concentration of skilled workers, for example, increases access to needed labor inputs. Proximity helps in many less formal ways, however. As has been shown repeatedly in analyses of such clusters as the Silicon Valley, knowledge sharing can occur through spontaneous or chance encounters between professionals living in the same community, enhancing overall innovation capacity (Rogers and Larsen, 1984; Maskell, 2001; Saxenian and Hsu, 2001). Porter (1998) further referred to the advantages of common language, culture, and social institutions in reducing transaction costs, and noted that local institutions are likely to be more responsive to the specialized needs of a cluster (e.g., for creating public infrastructure). He even pointed to peer pressure and the presence of rivals as causes for the enhanced competitiveness of firms that are embedded in a local cluster.

The research on IT use in local business clusters is somewhat mixed regarding the potential of e-commerce. In the early years of e-commerce, there were some efforts to establish regionally oriented malls to highlight area businesses and activities, such as the Electronic Mall Bodensee (Zimmermann, 1997). However, such regional malls were quite broad, and often were driven by local chambers of commerce, rather than focusing on a particular industry sector as in the above discussion of clusters. Many had a retail focus, as well, and were not built mainly for B2B trade support.

There are hints, however, in studies of Internet traffic, of the importance of geography on B2B trade. That electronic transactions might follow from physical proximity is suggested by Castell's (2001) fascinating account of the geography of the Internet, where he pointed out the spatial concentration associated not only with producers of Internet content and infrastructure, but among firms that use the Internet. The following quote

illustrates his thinking (Castells, 2001): " these advanced service centers are territorially concentrated, built on interpersonal networks of decision-making processes, organized around a territorial web of suppliers and customers, and increasingly communicated by the Internet among themselves" (p. 228). Indeed, one study of Internet traffic demonstrated that the majority of IP traffic flows within rather across locations (Kolko, 2000). Business-to-business transactions are embedded in an enabling social and cultural context, yet in striving for transaction efficiencies, most efforts to create electronic networks to support transactions go to great lengths to ignore and even bypass this context.

Such analyses of Internet traffic are suggestive, but more specific analyses of IT use for commerce and coordination in local business clusters reveal the fundamental challenges of replacing highly developed social exchange processes with electronic transactions. In these more specific studies, the outcomes of inter-organizational systems suggest a lack of fit between B2B marketplace design and local business cluster needs. They offer insights into why private networks continue to dominate in B2B commerce.

A good deal of research on IT use in a geographically defined business cluster has been conducted in the industrial region of Northern Italy. Some years ago, Johnston and Lawrence's (1988) seminal work on value-adding partnerships focused extensively on the Prato area textile industry. Their analysis examined how the large textile mills had disaggregrated into small, specialized firms that focused on one part of the overall value chain in textile production (e.g., washing, coloring, cutting). They showed how networks of firms worked in concert to meet the market demands for the good of the network and pointed out how an inter-organizational information system was being used to facilitate coordination (Johnston and Lawrence, 1988). However, a decade later, Kumar and colleagues revisited the merchants of Prato and found that the information system had been all but abandoned (Kumar et al., 1998). The system offered no real added value in terms of transaction cost reductions over the personal forms of coordination that had evolved over centuries of textile production in the region. Kumar et al. (1998) suggested that trust and personal relationships—the social capital of the region—were effective substitutes for the inter-organizational system, rendering it unnecessary.

Other research on B2B electronic transactions further disputes the assumptions that e-commerce can be an adequate substitute for personal relations and that network effects are critical in B2B trade. A case study of media buyers and sellers in France illustrates the sometimes oppositional nature of information systems built from a transaction cost rationality and existing practices based upon personal relationships (Caby et al., 1998). The market for TV advertising had become more complex due to the liberalization of the market and the resulting increase in private channels. An electronic marketplace was created by the media industry, allowing media buyers to find available time slots and reserve them. Theoretically, this would reduce selling costs and improve transaction efficiencies. It was built on France's Minitel system, and so required minimal investment by the buyers. However, it soon failed, largely because it prevented many of the relationship-based selling strategies that media representatives preferred. They could not offer the best times and prices to their preferred customers, for example. Moreover, customers behaved strategically, often reserving time slots only to prevent competitors from obtaining them. Before long, the media representatives were bypassing their own system, and returned to their prior methods of selling media time.

Another study by Kraut and colleagues (Kraut et al., 1998) investigated personal and electronic forms of transaction coordination between producers and suppliers in several industries. Their research extended the Kumar findings in important ways. In contrast to the Prato case, electronic networks were more likely to be used precisely when there were existing relationships between producers and suppliers, and greater use was associated with more tightly coupled producer-supplier relations. Kraut et al. (1998) explained this by pointing out that to be able to conduct electronic transactions, investments are required by the participants. Suppliers are unlikely to make such investments unless they can expect a certain amount of business. Note how this contradicts a rationality based on network effects, and predisposes firms to see more value when the number of participants in a B2B system is smaller rather than larger. In addition, e-commerce was complementary to, rather than a substitute for, personal relationships. This was evident in the finding of a positive association between the presence of personal links and the extent to which firms engaged in electronic transactions. Moreover, there was an interesting interaction between the two: the more firms attempted to substitute electronic transactions for personal forms of coordination, the more errors and quality problems they experienced with transactions. If they complemented electronic transactions with personal coordination, such problems were mitigated.

B2B Summary

The rise of industry consortia, and the growth of collaborative e-commerce suggest that pre-existing trading relationships have an important place in B2B electronic exchange. The experience of B2B electronic marketplaces reflects a movement away from an emphasis on arms-length transactions to one where the networks are used to support existing relationships. In fact, one might view some of the trade facilitation features common in B2B marketplaces as compensation for the lack of familiarity and trust that might have been present in trade between established partners. Such compensatory features include the need for member qualification and reputation and ratings services. Although the limited research on IT use in local business clusters suggests that traditional forms of coordination will supercede electronic coordination, other studies do find that the two can be complementary. To the extent that there is a higher probability of pre-existing relations among geographically proximate firms, then there is a role for B2B networks, albeit perhaps smaller, more closed user group ones, in local clusters. Research also finds that especially for upstream transactions, an emphasis on network effects might be dysfunctional. That is, the presence of too many competing suppliers might dissuade a company from making the necessary investments, since it may not anticipate attracting enough business from any one buyer.

CONCLUSION

A situated view of B2C and B2B electronic commerce was presented to illustrate the dangers of overly focusing on distance insensitivity, transaction automation capabilities, and network externality characteristics as the overriding logic guiding business model development. Instead, the paper offers a more situated view of electronic commerce. The essential features of this revised view of e-commerce are as follows:

- Geography still plays a critical role in shaping economic exchange, even over the Internet. In B2C exchange, the combination of online and offline channels offers many new ways to lower costs and offer new "synergistic" services to customers. In B2B exchange, there can be also be a geographically defined role for e-commerce. Smaller closed user groups can support upstream collaboration, especially among local business clusters. These clusters can of course employ e-commerce to complement other channels as they export finished products outside the local market.

- Automation of transactions can save on costs, but are not full substitutes for other offline modes of interaction. In particular, research suggests that one strategy is to rely on online channels for routine transactions while directing customers and clients to personal channels for higher value activities. Additionally, research on B2B electronic trade demonstrates that there may be some loss of quality when attempting to directly substitute electronic coordination for personal coordination. The two modes of coordination are complementary.

- It is just as important to direct e-commerce services to existing customers and other exchange partners as it is to target new exchange partners. In the B2C arena, companies can better exploit cross-channel synergies when they recognize that the same customers access their business via both online and offline channels. Customer retention is always less costly than customer acquisition (Friedman and Furey, 1999). In the B2B arena, e-commerce can be used to strengthen the ties among trusted trading partners. It can allow the exchange of sensitive data that can help streamline production cycles and lower development costs. Such tight integration only is possible among small groups, and so the pursuit of network effects might actually disrupt good trading relationships.

While e-commerce can span distances, enable automated transactions at a lower cost than offline transactions, and in many cases yield more value when there are more users, this review argues that the interpretation of such claims requires caution. The widespread failure of Internet-based firms in both B2B and B2C arenas necessitates a more balanced and situated approach to e-commerce that is sensitive to the established geographic and social context in which this evolving technology is embedded.

Some new lines of inquiry are suggested by the preceding review. How, for example, can firms best blend e-commerce with physical channels, and what does this imply for e-commerce-system developers? How can firms create incentives for offline channels to promote e-commerce? How can the potential synergies be exploited? What should the role of e-commerce be in local business clusters? How can B2B e-commerce better support smaller value webs while at the same time remaining flexible enough to accommodate change? As e-commerce becomes more pervasive, addressing such questions related to how it can work with, rather than replace, existing business approaches will only become more important.

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